

What is claimed is:

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a1 → A connector for an insulated concrete wall having spaced apart first and second layers of concrete and an insulation layer sandwiched between the concrete layers comprising, an elongated body having opposite first and second ends and having laterally spaced apart and longitudinally extending flanges interconnected by a web.

2. The connector of claim 1 wherein the body transfers forces between the first and second concrete layers such that the wall is substantially composite in character.

3. The connector of claim 1 further comprising first and second anchoring surfaces on the first and second ends adapted to anchor the first and second ends in the first and second layers of concrete, respectively.

4. The connector of claim 3 wherein the first and second anchorage surfaces are capable of transferring tension and compression forces along the flanges.

5. The connector of claim 1 further comprising an outwardly extending lip adapted to engage the insulation layer so as to limit the penetration of the connector through the insulation layer.

6. The connector of claim 1 wherein the body comprises a polymer material.

7. A wall panel, comprising:

- (a) spaced apart first and second concrete layers;
- (b) an insulation layer between the concrete layers;

- 5
- (c) a plurality of elongated connectors each extending through the insulation layer and having opposite ends embedded in the concrete layers; and
 - (d) each connector having longitudinally extending thickened portions with a thinner web extending between the thickened portions.

8. The panel of claim 7 wherein the connectors transfer forces between the first and second concrete layers whereby the wall has a substantially composite character.

9. The wall panel of claim 7 wherein the thickened portions and the web of each connector extend substantially along the length of the connectors.

10. The wall panel of claim 7 wherein the thickened portion of the connectors comprise an anchoring surface adjacent each end.

11. The connector of claim 10 wherein the connectors have first and second anchorage surfaces capable of transferring tension and compression forces along and parallel to the longitudinally extended thickened portions.

12. The wall panel of claim 7 wherein each connector has a centrally located region comprising a lip extending outwardly to engage the insulation layer.

13. The wall panel of claim 7 wherein each connector is made of a polymer material including fiber reinforcements.

14. A connector for an insulated concrete wall having spaced apart first and second layers of concrete and an insulation layer sandwiched between the concrete layers, comprising an elongated body having a width and a thickness, with the width being at least twice the thickness along the length of the connector.

15. The connector of claim 14 wherein the body transfers forces between the first and second concrete layers such that the wall is substantially composite in character.

16. The connector of claim 14 wherein the body includes at least one longitudinally extending flange.

17. The connector of claim 14 wherein the body has a pair of laterally spaced apart longitudinally extending flanges interconnected by a web.

18. The connector of claim 14 further comprising anchoring surfaces at each end of the body to anchor the body in the concrete layers.

19. The connector of claim 18 wherein the first and second anchorage surfaces are capable of transferring tension and compression forces along the flanges.

20. The connector of claim 14 further comprising a lip on the body adapted to engage the insulation layer to limit penetration of the body through the insulation layer.

21. The connector of claim 6 wherein the polymer material is selected from the group comprising fiber- reinforced thermoplastic resin and fiber- reinforced thermoset resin.